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Fred Dacimo
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Operations License Renewal

NL-14-093

August 05, 2014

U.S. Nuclear Regulatory Commission
Document Control Desk
11545 Rockville Pike, TWFN-2 F1
Rockville, MD 20852-2738

SUBJECT: Reply to Request for Additional Information Regarding the License Renewal Application
Indian Point Nuclear Generating Unit Nos. 2 & 3
Docket Nos. 50-247 and 50-286
License Nos. DPR-26 and DPR-64

REFERENCES:

1. Entergy letter (NL-14-067), "Reply to Request for Additional Information Regarding the License Renewal Application," dated June 9, 2014.

2. NRC letter, "Request for Additional Information for the Review of the Indian Point Nuclear Generating Unit Nos. 2 and 3, License Renewal Application, SET 2014-02 (TAC Nos. MD5407 and MD5408)" dated April 9, 2014.

3. NRC letter, "Summary of Conference Calls Held on June 19 and July 16, 2014, Between the U.S. Regulatory Commission and Entergy Nuclear Operations, Inc., Entergy's Response to a Request for Additional Information on Applicant/Licensee Action Item 7 from MRP-227-A," dated August 1, 2014.

Dear Sir or Madam:

Entergy Nuclear Operations, Inc. submitted in Reference 1 a response to NRC RAIs 11-C, 16-B and 17-A (Reference 2). Following that submittal Entergy and the NRC held two clarification calls concerning the response to RAI 11-C (Reference 3). As a result of those calls Entergy is submitting, in Attachment 1, a revised response to RAI 11-C. The responses to RAIs 16-B and 17-A remain unchanged.

The revised response to RAI 11-C includes the deletion of Commitment 47. This commitment change is depicted in the list of regulatory commitments provided in Attachment 2.

If you have any questions, or require additional information, please contact Mr. Robert Walpole at 914-254-6710.

A128
NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on 8/5, 2014.

Sincerely,

FRD/rw

Attachment: 1. Reply to NRC Request for Additional Information Regarding the License Renewal Application

2. License Renewal Application IPEC List of Regulatory Commitments Revision 24

cc: Mr. William Dean, Regional Administrator, NRC Region I
Mr. Sherwin E. Turk, NRC Office of General Counsel, Special Counsel
Mr. Dave Wrona, NRC Branch Chief, Engineering Review Branch I
Ms. Kimberly Green, NRC Sr. Project Manager, Division of License Renewal
Mr. Douglas Pickett, NRR Senior Project Manager
Ms. Bridget Frymire, New York State Department of Public Service
NRC Resident Inspector's Office
Mr. John B. Rhodes, President and CEO NYSERDA

ATTACHMENT 1 TO NL-14-093

REPLY TO NRC REQUEST FOR ADDITIONAL INFORMATION

REGARDING THE

LICENSE RENEWAL APPLICATION

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 & 3
DOCKET NOS. 50-247 AND 50-286

REQUEST FOR ADDITIONAL INFORMATION, SET 2014-02
RELATED TO INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 AND 3
LICENSE RENEWAL APPLICATION

REACTOR VESSEL INTERNALS PROGRAM AND INSPECTION PLAN

RAI 11-C

Applicant/Licensee Action Item 7 from the staff's final safety evaluation (SE) of MRP-227 requires the applicants/licensees of Babcock & Wilcox (B&W), Combustion Engineering (CE), and Westinghouse reactors to develop plant-specific analyses to be applied for their facilities to demonstrate that B&W In-Core Monitoring Instrumentation (IMI) guide tube assembly spiders and control rod guide tube (CRGT) assembly spacer castings, CE lower support columns, and Westinghouse lower support column bodies will maintain their functionality during the period of extended operation, and states that these analyses should also consider the possible loss of fracture toughness in these components due to thermal embrittlement (TE) and irradiation embrittlement (IE). For Indian Point Nuclear Generating Unit Nos. 2 and 3 (IP2 and IP3), the equivalent component to the lower support column bodies are the lower internals assembly - column caps (column caps).

By letter dated January 28, 2014, Entergy provided plant specific information on the ferrite content and susceptibility to TE for the Indian Point Nuclear Generating Unit Nos. 2 and 3 lower internals assembly - column caps. Based on its evaluation of the plant-specific material information for the column caps, Entergy concluded that the IP2 and IP3 column caps are not susceptible to TE.

Entergy's conclusion related to TE notwithstanding, the column caps remain susceptible to IE. The staff is concerned that the linked Primary component for the column caps, the CRGT assembly lower flange welds, is not a good predictor of IE for the column caps since the CRGT lower flange welds receive substantially lower neutron fluence than the column caps (based on the estimated neutron fluence tabulated in MRP-191 for the two components). Irradiation assisted stress corrosion cracking (IASCC) is the only mechanism of cracking that screened in for the column caps. The CRGT lower flange welds are also not a good predictor for IASCC of the column caps, because the lower flange welds are susceptible to stress corrosion cracking (SCC) and fatigue cracking, but not IASCC.

The staff, therefore, requests that Entergy modify its Reactor Vessel Internals Inspection Plan (RVI Inspection Plan) to provide a link to a Primary component or components that is an appropriate predictor of IE and IASCC of the column caps.

Response to RAI 11-C

The following text will be incorporated into the reactor vessel internals (RVI) Inspection Plan for Indian Point Units 2 and 3. This text regards a link to a component that is an appropriate predictor of irradiation embrittlement (IE) and irradiation-assisted stress corrosion cracking (IASCC) of the column caps (i.e., lower internals assembly – column caps).

"The cast austenitic stainless steel lower support column bodies (column caps) are listed in MRP-227-A [5, Table 4-6] as "Expansion" components, with the inspection triggered by the observation of cracking in the control rod guide tube (CRGT) lower flange weld, which is a "Primary" component. The degradation mechanisms that were screened in for these components are identified in MRP-191 [2], a supporting report for MRP-227-A, and are summarized in Table 1, below. IE, which has no demonstrated non-destructive examination (NDE) technique, is identified in Table 1 below as a degradation mechanism for the lower support column bodies (column caps) and CRGT lower flange weld. The "Primary" to "Expansion" linkage in MRP-227-A was based on consideration of the total relative susceptibility of the components due to the combined application of all screened in degradation mechanisms. Priority is given to the leading indicator and the inspection technique and timing focus on initial onset detectability of the effects of the degradation using proven NDE techniques. The relevant degradation mechanisms that could drive cracking in the lower support column bodies (column caps) are IE and IASCC.

The "Primary" inspection component for the cast section of the lower support column body (column cap) was originally the cast CRGT lower flange weld. Both of these components were identified as potentially subject to thermal embrittlement (TE) in MRP-191 [2]. However, plant-specific evaluations indicate that TE is not a concern for Indian Point Units 2 and 3 because the Hull's ferrite number is less than the industry screening criterion of 20%. The ferrite content is below 15% for Indian Point Unit 2 and below 12% for Indian Point Unit 3 [4]. Although the low ferrite content eliminates the TE concerns in the lower support column bodies (column caps) at Indian Point Units 2 and 3, the MRP-227-A link to the "Primary" CRGT lower flange weld inspection was maintained to be consistent with the NRC direction in the Safety Evaluation [5] for MRP-227-A.

An additional "Primary" inspection link for the lower support column bodies (column caps) is being added at both Indian Point units because the 60-year fluence in the top few inches of the lower support column body, which is where the column cap is located, is projected to exceed the threshold criteria for IE and IASCC of austenitic stainless steel. Therefore, regardless of the material type or ferrite content, IE and IASCC must be considered as damage mechanisms in the lower support column bodies (column caps).

A review of the screening results from MRP-191 [2] indicates multiple near-core components that potentially experience neutron fluences and stresses over the IE and IASCC threshold/screening criterion, similar to the lower support column bodies (column caps). From this set of components, as explained below, the lower core barrel cylinder girth weld is an appropriate leading indicator of IE and IASCC in the lower support column bodies (column caps).

MRP-227-A [5] requires an EVT-1 inspection of welds in both the upper and lower core barrel sections. Although many of these core barrel welds do not exceed the neutron fluence threshold for either IE or IASCC, the lower core barrel cylinder girth weld has been identified in MRP-191 as being subject to both mechanisms. Selection of the lower core barrel cylinder girth weld, which incurs the highest fluence, as a leading indicator of IE and IASCC in the lower support columns is based on consideration of material, temperature, fluence, and stress factors.

1. **Material:** The process of melting and solidification that occurs during the welding process produces a steel microstructure that is similar to an austenitic casting with low ferrite content.

2. **Temperature:** Reactor coolant at the core barrel exterior and the lower core support columns is at core inlet temperatures. Gamma heating effects in these components are expected to be small. The analysis provided in MRP-230 [6] indicates relatively small temperature increases in the core barrel and lower core support structure.

3. **Fluence:** Examination of neutron fluence data from the Indian Point units indicates that there is a general correspondence between the peak neutron fluence in the core barrel [7] and the fluence range in the top four centimeters of the lower support columns [8]. The 60-year peak fast neutron fluence projected in the lower core barrel after 48 effective full power years of operation will be approximately 2.5×10^{21} n/cm^2 (E > 1MeV) ≈ 4dpa. After the same period of operation, the peak fast neutron fluence at the top surface of the lower support columns near the core centerline will be approximately, 4.11×10^{21} n/cm^2 (E > 1MeV) ≈ 6 dpa. However, the attenuation of fluence below the core is steep and the peak fast neutron fluence in the lower support columns at a distance of four centimeters below the lower core plate will be 2.07×10^{21} n/cm^2 (E > 1MeV) ≈ 3 dpa.

4. **Stress:** Although it is difficult to quantify the stresses in the lower core barrel cylinder girth weld and the lower support column, it is reasonable to anticipate large surface stresses in the lower core barrel cylinder girth weld. Under typical welding procedures, large tensile stresses approaching the unirradiated yield stress can be generated at the weld surfaces as the metal cools. Additional tensile stresses may be generated on the outer surface of the core barrel due to temperature gradients caused by the attenuation of gamma heating through the barrel thickness. Axial loads associated with the core support function of the barrel may also contribute to the tensile stress on the core barrel weld. In contrast, the core support loads on the lower support columns are primarily compressive and there are no anticipated residual stresses. Thermal deflections caused by heating of the lower core plate may impose a surface stress due to bending of the lower support columns. However, these stresses are expected to be small compared to the stress in the lower core barrel cylinder girth weld.

Given the similarities between material, temperature, and fluence in the lower support columns and the lower core barrel cylinder girth weld, stress is the leading factor that determines the relative susceptibility to degradation effects caused by IE and IASCC. Given the significantly higher stress, the lower core barrel cylinder girth weld is a leading indicator of IE and IASCC in the lower support columns.

The MRP-227-A [5] requirements are augmented by including the MRP-227-A required EVT-1 inspection of the lower core barrel cylinder girth weld as an additional "Primary" link for an "Expansion" inspection of the Indian Point lower support column bodies (column caps) for managing IE and IASCC. Consistent with existing guidance in MRP-227-A, confirmation of a surface crack greater than two inches in length will be taken as an indication of active cracking in the lower core barrel cylinder girth weld. This confirmation will require expansion of the inspection to the Indian Point lower support column bodies (column caps). The link between the CRGT lower flange welds and the lower support column bodies (column caps) provided in MRP-227-A remains unchanged.

The expansion inspection will be conducted within two refueling outages of the original observation of cracking in the lower core barrel cylinder girth weld. It is reasonable to expect a significant delay in the onset of cracking in the lower support column bodies (column caps) based on the difference in stress. Existing analysis of laboratory data [3] indicates that large stresses are required to initiate IASCC at fluences below 10 dpa. The lower support column bodies (column caps) are projected to be primarily in a compressive stress state; therefore, they are expected to have a higher threshold fluence for IE and IASCC than the core barrel. Completion of the "Expansion" inspection within two refueling outages (each fuel cycle is 24 months in duration) represents only 13% more than the approximately 32 effective full power years of service experienced prior to the inspection of the core barrel cylinder girth weld. This provides reasonable assurance that IE and IASCC degradation, if any, will be detected in a timely fashion."

The intent of Commitment 47 was to demonstrate that the lower support column bodies (column caps) will maintain their functionality during the period of extended operation considering the possible loss of fracture toughness due to thermal and irradiation embrittlement. As the staff noted in this RAI 11-C, Entergy has concluded that the IP2 and IP3 lower support column bodies (column caps) are not susceptible to TE and will modify the Reactor Vessel Internals (RVI) Inspection Plan to credit inspection of the lower core barrel cylinder girth weld as an appropriate predictor of IE and IASCC in the lower support column bodies (column caps). Therefore, the functionality of the lower support column bodies (column caps) is assured during the period of extended operation without the need for a functionality analysis. Therefore, Entergy is deleting Commitment 47 (additions are underlined, deletions lined out).

Commitment 47
~~IPEC will perform and submit analyses that demonstrate that the lower support column bodies will maintain their functionality during the period of extended operation considering the possible loss of fracture toughness due to thermal and irradiation embrittlement. The analyses will be consistent with the IP2/IP3 licensing basis.~~ Deleted.

References

1. U.S. Nuclear Regulatory Commission, "Request for Additional Information for the Review of the Indian Point Nuclear Generating Unit Nos. 2 and 3, License Renewal Application, Set 2014-02 (TAC Nos. MD5407 and MD5408)," April 9, 2014. (ADAMS ML14094A173).

2. Materials Reliability Program: Screening, Categorization, and Ranking of Reactor Internals Components for Westinghouse and Combustion Engineering PWR Design (MRP-191). EPRI, Palo Alto, CA: 2006. 1013234 (ADAMS ML12335A503).

3. Materials Reliability Program: PWR Internals Material Aging Degradation Mechanism Screening and Threshold Values (MRP-175). EPRI, Palo Alto. CA: 2005. 1012081 (ADAMS ML12335A503).

4. Entergy Letter, NL-14-013, "Additional Information Regarding the License Renewal Application – Action Item 7 from MRP-227-A, Indian Point Nuclear Generating Unit Nos. 2 & 3, Docket Nos. 50-247 and 50-286, License Nos. DPR-26 and DPR-64," January 28, 2014 (ADAMS ML14038A150).

5. Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines (MRP-227-A). EPRI, Palo Alto, CA: 2011. 1022863 (ADAMS ML120170453).

6. Materials Reliability Program: Functionality Analysis for Westinghouse and Combustion Engineering Representative PWR Internals (MRP-230-Rev. 1).EPRI, Palo Alto, CA: 2009. 1019091.

7. Westinghouse Report, WCAP-17780-P, Rev. 0, "Reactor Internals Aging Management MRP-227-A Applicability for Combustion Engineering and Westinghouse Pressurized Water Reactor Designs," June 2013 (ADAMS ML13322A454). (Westinghouse Proprietary Class 2).

8. Westinghouse Calculation Note, CN-REA-13-38, Rev. 1, "Lower Core Support Fluence and Gamma Heat Generation Rate Evaluation for Aging Management at Indian Point Units 2 & 3," October 9, 2013. (Westinghouse Proprietary Class 2).

Table 1
MRP-191 Screening Table for Westinghouse Reactor Internals [2]

Assembly	Subassembly	Component	Material	None	SCC	IASCC	Wear	Fatigue	TE	IE	VS	ISR/IC
Upper Internals Assembly	Control Rod Guide Tube Assemblies and Flow Downcomers	Flanges - Lower	304 SS		Weld			Fat				
		Flanges – Lower	CF8		SCC			Fat	TE	IE		
Lower Internals Assembly	Core Barrel	Core barrel Flange	304 SS		Weld							
		Lower Core Barrel (Weld)	304 SS		Weld	IASCC				IE		
	Lower Support Column Assemblies	Lower Support Column Bodies	CF8			IASCC			TE	IE	VS	
		Lower Support Column Bodies	304 SS			IASCC				IE	VS	

Notes:

SCC = stress corrosion cracking
VS = void swelling
ISR/IC = irradiation-induced stress relaxation and irradiation creep

ATTACHMENT 2 TO NL-14-093

LICENSE RENEWAL APPLICATION

IPEC LIST OF REGULATORY COMMITMENTS

Rev. 24

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 & 3
DOCKET NOS. 50-247 AND 50-286

List of Regulatory Commitments

Rev. 24

The following table identifies those actions committed to by Entergy in this document.

Changes are shown as strikethroughs for ~~deletions~~ and underlines for additions.

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
1	Enhance the Aboveground Steel Tanks Program for IP2 and IP3 to perform thickness measurements of the bottom surfaces of the condensate storage tanks, city water tank, and fire water tanks once during the first ten years of the period of extended operation. Enhance the Aboveground Steel Tanks Program for IP2 and IP3 to require trending of thickness measurements when material loss is detected.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122	A.2.1.1 A.3.1.1 B.1.1
2	Enhance the Bolting Integrity Program for IP2 and IP3 to clarify that actual yield strength is used in selecting materials for low susceptibility to SCC and clarify the prohibition on use of lubricants containing MoS_2 for bolting. The Bolting Integrity Program manages loss of preload and loss of material for all external bolting.	IP2: Complete IP3: Complete	NL-07-039 NL-07-153 NL-13-122	A.2.1.2 A.3.1.2 B.1.2 Audit Items 201, 241, 270

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
3	Implement the Buried Piping and Tanks Inspection Program for IP2 and IP3 as described in LRA Section B.1.6. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.M34, Buried Piping and Tanks Inspection. Include in the Buried Piping and Tanks Inspection Program described in LRA Section B.1.6 a risk assessment of in-scope buried piping and tanks that includes consideration of the impacts of buried piping or tank leakage and of conditions affecting the risk for corrosion. Classify pipe segments and tanks as having a high, medium or low impact of leakage based on the safety class, the hazard posed by fluid contained in the piping and the impact of leakage on reliable plant operation. Determine corrosion risk through consideration of piping or tank material, soil resistivity, drainage, the presence of cathodic protection and the type of coating. Establish inspection priority and frequency for periodic inspections of the in-scope piping and tanks based on the results of the risk assessment. Perform inspections using inspection techniques with demonstrated effectiveness.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153 NL-09-106 NL-09-111 NL-11-101	A.2.1.5 A.3.1.5 B.1.6 Audit Item 173

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
4	Enhance the Diesel Fuel Monitoring Program to include cleaning and inspection of the IP2 GT-1 gas turbine fuel oil storage tanks, IP2 and IP3 EDG fuel oil day tanks, IP2 SBO/Appendix R diesel generator fuel oil day tank, and IP3 Appendix R fuel oil storage tank and day tank once every ten years. Enhance the Diesel Fuel Monitoring Program to include quarterly sampling and analysis of the IP2 SBO/Appendix R diesel generator fuel oil day tank, IP2 security diesel fuel oil storage tank, IP2 security diesel fuel oil day tank, and IP3 Appendix R fuel oil storage tank. Particulates, water and sediment checks will be performed on the samples. Filterable solids acceptance criterion will be less than or equal to 10mg/l. Water and sediment acceptance criterion will be less than or equal to 0.05%. Enhance the Diesel Fuel Monitoring Program to include thickness measurement of the bottom of the following tanks once every ten years. IP2: EDG fuel oil storage tanks, EDG fuel oil day tanks, SBO/Appendix R diesel generator fuel oil day tank, GT-1 gas turbine fuel oil storage tanks, and diesel fire pump fuel oil storage tank; IP3: EDG fuel oil day tanks, EDG fuel oil storage tanks, Appendix R fuel oil storage tank, and diesel fire pump fuel oil storage tank. Enhance the Diesel Fuel Monitoring Program to change the analysis for water and particulates to a quarterly frequency for the following tanks. IP2: GT-1 gas turbine fuel oil storage tanks and diesel fire pump fuel oil storage tank; IP3: Appendix R fuel oil day tank and diesel fire pump fuel oil storage tank. Enhance the Diesel Fuel Monitoring Program to specify acceptance criteria for thickness measurements of the fuel oil storage tanks within the scope of the program. Enhance the Diesel Fuel Monitoring Program to direct samples be taken and include direction to remove water when detected. Revise applicable procedures to direct sampling of the onsite portable fuel oil contents prior to transferring the contents to the storage tanks. Enhance the Diesel Fuel Monitoring Program to direct the addition of chemicals including biocide when the presence of biological activity is confirmed.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153 NL-08-057	A.2.1.8 A.3.1.8 B.1.9 Audit items 128, 129, 132, 491, 492, 510

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
5	Enhance the External Surfaces Monitoring Program for IP2 and IP3 to include periodic inspections of systems in scope and subject to aging management review for license renewal in accordance with 10 CFR 54.4(a)(1) and (a)(3). Inspections shall include areas surrounding the subject systems to identify hazards to those systems. Inspections of nearby systems that could impact the subject systems will include SSCs that are in scope and subject to aging management review for license renewal in accordance with 10 CFR 54.4(a)(2).	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122	A.2.1.10 A.3.1.10 B.1.11
6	Enhance the Fatigue Monitoring Program for IP2 to monitor steady state cycles and feedwater cycles or perform an evaluation to determine monitoring is not required. Review the number of allowed events and resolve discrepancies between reference documents and monitoring procedures. Enhance the Fatigue Monitoring Program for IP3 to include all the transients identified. Assure all fatigue analysis transients are included with the lowest limiting numbers. Update the number of design transients accumulated to date.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153	A.2.1.11 A.3.1.11 B.1.12, Audit Item 164

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
7	Enhance the Fire Protection Program to inspect external surfaces of the IP3 RCP oil collection systems for loss of material each refueling cycle. Enhance the Fire Protection Program to explicitly state that the IP2 and IP3 diesel fire pump engine sub-systems (including the fuel supply line) shall be observed while the pump is running. Acceptance criteria will be revised to verify that the diesel engine does not exhibit signs of degradation while running; such as fuel oil, lube oil, coolant, or exhaust gas leakage. Enhance the Fire Protection Program to specify that the IP2 and IP3 diesel fire pump engine carbon steel exhaust components are inspected for evidence of corrosion and cracking at least once each operating cycle. Enhance the Fire Protection Program for IP3 to visually inspect the cable spreading room, 480V switchgear room, and EDG room CO_2 fire suppression system for signs of degradation, such as corrosion and mechanical damage at least once every six months.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122	A.2.1.12 A.3.1.12 B.1.13

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
8	Enhance the Fire Water Program to include inspection of IP2 and IP3 hose reels for evidence of corrosion. Acceptance criteria will be revised to verify no unacceptable signs of degradation. Enhance the Fire Water Program to replace all or test a sample of IP2 and IP3 sprinkler heads required for 10 CFR 50.48 using guidance of NFPA 25 (2002 edition), Section 5.3.1.1.1 before the end of the 50-year sprinkler head service life and at 10-year intervals thereafter during the extended period of operation to ensure that signs of degradation, such as corrosion, are detected in a timely manner. Enhance the Fire Water Program to perform wall thickness evaluations of IP2 and IP3 fire protection piping on system components using non-intrusive techniques (e.g., volumetric testing) to identify evidence of loss of material due to corrosion. These inspections will be performed before the end of the current operating term and at intervals thereafter during the period of extended operation. Results of the initial evaluations will be used to determine the appropriate inspection interval to ensure aging effects are identified prior to loss of intended function. Enhance the Fire Water Program to inspect the internal surface of foam based fire suppression tanks. Acceptance criteria will be enhanced to verify no significant corrosion.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153 NL-08-014	A.2.1.13 A.3.1.13 B.1.14 Audit Items 105, 106

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
9	Enhance the Flux Thimble Tube Inspection Program for IP2 and IP3 to implement comparisons to wear rates identified in WCAP-12866. Include provisions to compare data to the previous performances and perform evaluations regarding change to test frequency and scope. Enhance the Flux Thimble Tube Inspection Program for IP2 and IP3 to specify the acceptance criteria as outlined in WCAP-12866 or other plant-specific values based on evaluation of previous test results. Enhance the Flux Thimble Tube Inspection Program for IP2 and IP3 to direct evaluation and performance of corrective actions based on tubes that exceed or are projected to exceed the acceptance criteria. Also stipulate that flux thimble tubes that cannot be inspected over the tube length and cannot be shown by analysis to be satisfactory for continued service, must be removed from service to ensure the integrity of the reactor coolant system pressure boundary.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122	A.2.1.15 A.3.1.15 B.1.16

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
10	Enhance the Heat Exchanger Monitoring Program for IP2 and IP3 to include the following heat exchangers in the scope of the program. • Safety injection pump lube oil heat exchangers • RHR heat exchangers • RHR pump seal coolers • Non-regenerative heat exchangers • Charging pump seal water heat exchangers • Charging pump fluid drive coolers • Charging pump crankcase oil coolers • Spent fuel pit heat exchangers • Secondary system steam generator sample coolers • Waste gas compressor heat exchangers • SBO/Appendix R diesel jacket water heat exchanger (IP2 only) Enhance the Heat Exchanger Monitoring Program for IP2 and IP3 to perform visual inspection on heat exchangers where non-destructive examination, such as eddy current inspection, is not possible due to heat exchanger design limitations. Enhance the Heat Exchanger Monitoring Program for IP2 and IP3 to include consideration of material-environment combinations when determining sample population of heat exchangers. Enhance the Heat Exchanger Monitoring Program for IP2 and IP3 to establish minimum tube wall thickness for the new heat exchangers identified in the scope of the program. Establish acceptance criteria for heat exchangers visually inspected to include no indication of tube erosion, vibration wear, corrosion, pitting, fouling, or scaling.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153 NL-09-018	A.2.1.16 A.3.1.16 B.1.17, Audit Item 52
11	Deleted		NL-09-056 NL-11-101	

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
12	Enhance the Masonry Wall Program for IP2 and IP3 to specify that the IP1 intake structure is included in the program.	IP2: Complete IP3: Complete	NL-07-039 NL-13-122	A.2.1.18 A.3.1.18 B.1.19
13	Enhance the Metal-Enclosed Bus Inspection Program for IP2 and IP3 to visually inspect the external surface of MEB enclosure assemblies for loss of material at least once every 10 years. The first inspection will occur prior to the period of extended operation and the acceptance criterion will be no significant loss of material. Enhance the Metal-Enclosed Bus Inspection Program to add acceptance criteria for MEB internal visual inspections to include the absence of indications of dust accumulation on the bus bar, on the insulators, and in the duct, in addition to the absence of indications of moisture intrusion into the duct. Enhance the Metal-Enclosed Bus Inspection Program for IP2 and IP3 to inspect bolted connections at least once every five years if performed visually or at least once every ten years using quantitative measurements such as thermography or contact resistance measurements. The first inspection will occur prior to the period of extended operation. The plant will process a change to applicable site procedure to remove the reference to "re-torquing" connections for phase bus maintenance and bolted connection maintenance.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153 NL-08-057 NL-13-077	A.2.1.19 A.3.1.19 B.1.20 Audit Items 124, 133, 519
14	Implement the Non-EQ Bolted Cable Connections Program for IP2 and IP3 as described in LRA Section B.1.22.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122	A.2.1.21 A.3.1.21 B.1.22

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
15	Implement the Non-EQ Inaccessible Medium-Voltage Cable Program for IP2 and IP3 as described in LRA Section B.1.23. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.E3, Inaccessible Medium-Voltage Cables Not Subject To 10 CFR 50.49 Environmental Qualification Requirements.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153 NL-11-032 NL-11-096 NL-11-101	A.2.1.22 A.3.1.22 B.1.23 Audit item 173
16	Implement the Non-EQ Instrumentation Circuits Test Review Program for IP2 and IP3 as described in LRA Section B.1.24. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.E2, Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153	A.2.1.23 A.3.1.23 B.1.24 Audit item 173
17	Implement the Non-EQ Insulated Cables and Connections Program for IP2 and IP3 as described in LRA Section B.1.25. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.E1, Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153	A.2.1.24 A.3.1.24 B.1.25 Audit item 173

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
18	Enhance the Oil Analysis Program for IP2 to sample and analyze lubricating oil used in the SBO/Appendix R diesel generator consistent with the oil analysis for other site diesel generators. Enhance the Oil Analysis Program for IP2 and IP3 to sample and analyze generator seal oil and turbine hydraulic control oil. Enhance the Oil Analysis Program for IP2 and IP3 to formalize preliminary oil screening for water and particulates and laboratory analyses including defined acceptance criteria for all components included in the scope of this program. The program will specify corrective actions in the event acceptance criteria are not met. Enhance the Oil Analysis Program for IP2 and IP3 to formalize trending of preliminary oil screening results as well as data provided from independent laboratories.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-11-101	A.2.1.25 A.3.1.25 B.1.26
19	Implement the One-Time Inspection Program for IP2 and IP3 as described in LRA Section B.1.27. This new program will be implemented consistent with the corresponding program described in NUREG-1801, Section XI.M32, One-Time Inspection.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153	A.2.1.26 A.3.1.26 B.1.27 Audit item 173
20	Implement the One-Time Inspection – Small Bore Piping Program for IP2 and IP3 as described in LRA Section B.1.28. This new program will be implemented consistent with the corresponding program described in NUREG-1801, Section XI.M35, One-Time Inspection of ASME Code Class I Small-Bore Piping.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153	A.2.1.27 A.3.1.27 B.1.28 Audit item 173
21	Enhance the Periodic Surveillance and Preventive Maintenance Program for IP2 and IP3 as necessary to assure that the effects of aging will be managed such that applicable components will continue to perform their intended functions consistent with the current licensing basis through the period of extended operation.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122	A.2.1.28 A.3.1.28 B.1.29

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
22	Enhance the Reactor Vessel Surveillance Program for IP2 and IP3 revising the specimen capsule withdrawal schedules to draw and test a standby capsule to cover the peak reactor vessel fluence expected through the end of the period of extended operation. Enhance the Reactor Vessel Surveillance Program for IP2 and IP3 to require that tested and untested specimens from all capsules pulled from the reactor vessel are maintained in storage.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122	A.2.1.31 A.3.1.31 B.1.32
23	Implement the Selective Leaching Program for IP2 and IP3 as described in LRA Section B.1.33. This new program will be implemented consistent with the corresponding program described in NUREG-1801, Section XI.M33 Selective Leaching of Materials.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153	A.2.1.32 A.3.1.32 B.1.33 Audit item 173
24	Enhance the Steam Generator Integrity Program for IP2 and IP3 to require that the results of the condition monitoring assessment are compared to the operational assessment performed for the prior operating cycle with differences evaluated.	IP2: Complete IP3: Complete	NL-07-039 NL-13-122	A.2.1.34 A.3.1.34 B.1.35
25	Enhance the Structures Monitoring Program to explicitly specify that the following structures are included in the program. • Appendix R diesel generator foundation (IP3) • Appendix R diesel generator fuel oil tank vault (IP3) • Appendix R diesel generator switchgear and enclosure (IP3) • city water storage tank foundation • condensate storage tanks foundation (IP3) • containment access facility and annex (IP3) • discharge canal (IP2/3) • emergency lighting poles and foundations (IP2/3) • fire pumphouse (IP2) • fire protection pumphouse (IP3) • fire water storage tank foundations (IP2/3) • gas turbine 1 fuel storage tank foundation • maintenance and outage building-elevated passageway (IP2) • new station security building (IP2) • nuclear service building (IP1) • primary water storage tank foundation (IP3) • refueling water storage tank foundation (IP3)	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153 NL-08-057 NL-13-077	A.2.1.35 A.3.1.35 B.1.36 Audit items 86, 87, 88, 417

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
	• security access and office building (IP3) • service water pipe chase (IP2/3) • service water valve pit (IP3) • superheater stack • transformer/switchyard support structures (IP2) • waste holdup tank pits (IP2/3) Enhance the Structures Monitoring Program for IP2 and IP3 to clarify that in addition to structural steel and concrete, the following commodities (including their anchorages) are inspected for each structure as applicable. • cable trays and supports • concrete portion of reactor vessel supports • conduits and supports • cranes, rails and girders • equipment pads and foundations • fire proofing (pyrocrete) • HVAC duct supports • jib cranes • manholes and duct banks • manways, hatches and hatch covers • monorails • new fuel storage racks • sumps Enhance the Structures Monitoring Program for IP2 and IP3 to inspect inaccessible concrete areas that are exposed by excavation for any reason. IP2 and IP3 will also inspect inaccessible concrete areas in environments where observed conditions in accessible areas exposed to the same environment indicate that significant concrete degradation is occurring. Enhance the Structures Monitoring Program for IP2 and IP3 to perform inspections of elastomers (seals, gaskets, seismic joint filler, and roof elastomers) to identify cracking and change in material properties and for inspection of aluminum vents and louvers to identify loss of material. Enhance the Structures Monitoring Program for IP2		NL-13-077	

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
	and IP3 to perform an engineering evaluation of groundwater samples to assess aggressiveness of groundwater to concrete on a periodic basis (at least once every five years). IPEC will obtain samples from at least 5 wells that are representative of the ground water surrounding below-grade site structures and perform an engineering evaluation of the results from those samples for sulfates, pH and chlorides. Additionally, to assess potential indications of spent fuel pool leakage, IPEC will sample for tritium in groundwater wells in close proximity to the IP2 spent fuel pool at least once every 3 months. Enhance the Structures Monitoring Program for IP2 and IP3 to perform inspection of normally submerged concrete portions of the intake structures at least once every 5 years. Inspect the baffling/grating partition and support platform of the IP3 intake structure at least once every 5 years. Enhance the Structures Monitoring Program for IP2 and IP3 to perform inspection of the degraded areas of the water control structure once per 3 years rather than the normal frequency of once per 5 years during the PEO. Enhance the Structures Monitoring Program to include more detailed quantitative acceptance criteria for inspections of concrete structures in accordance with ACI 349.3R, "Evaluation of Existing Nuclear Safety-Related Concrete Structures" prior to the period of extended operation.		NL-08-127 NL-11-032 NL-11-101	Audit Item 360 Audit Item 358
26	Implement the Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS) Program for IP2 and IP3 as described in LRA Section B.1.37. This new program will be implemented consistent with the corresponding program described in NUREG-1801, Section XI.M12, Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS) Program.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122 NL-07-153	A.2.1.36 A.3.1.36 B.1.37 Audit item 173

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
27	Implement the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program for IP2 and IP3 as described in LRA Section B.1.38. This new program will be implemented consistent with the corresponding program described in NUREG-1801 Section XI.M13, Thermal Aging and Neutron Embrittlement of Cast Austenitic Stainless Steel (CASS) Program.	IP2: Complete IP3: Complete	NL-07-039 NL-13-122 NL-07-153	A.2.1.37 A.3.1.37 B.1.38 Audit item 173
28	Enhance the Water Chemistry Control – Closed Cooling Water Program to maintain water chemistry of the IP2 SBO/Appendix R diesel generator cooling system per EPRI guidelines. Enhance the Water Chemistry Control – Closed Cooling Water Program to maintain the IP2 and IP3 security generator and fire protection diesel cooling water pH and glycol within limits specified by EPRI guidelines.	IP2: Complete IP3: Complete	NL-07-039 NL-13-122 NL-08-057	A.2.1.39 A.3.1.39 B.1.40 Audit item 509
29	Enhance the Water Chemistry Control – Primary and Secondary Program for IP2 to test sulfates monthly in the RWST with a limit of <150 ppb.	IP2: Complete	NL-07-039 NL-13-122	A.2.1.40 B.1.41
30	For aging management of the reactor vessel internals, IPEC will (1) participate in the industry programs for investigating and managing aging effects on reactor internals; (2) evaluate and implement the results of the industry programs as applicable to the reactor internals; and (3) upon completion of these programs, but not less than 24 months before entering the period of extended operation, submit an inspection plan for reactor internals to the NRC for review and approval.	IP2: Complete IP3: Complete	NL-07-039 NL-13-122 NL-11-107	A.2.1.41 A.3.1.41
31	Additional P-T curves will be submitted as required per 10 CFR 50, Appendix G prior to the period of extended operation as part of the Reactor Vessel Surveillance Program.	IP2: Complete IP3: December 12, 2015	NL-07-039 NL-13-122	A.2.2.1.2 A.3.2.1.2 4.2.3
32	As required by 10 CFR 50.61(b)(4), IP3 will submit a plant-specific safety analysis for plate B2803-3 to the NRC three years prior to reaching the RT_{PTS} screening criterion. Alternatively, the site may choose to implement the revised PTS rule when approved.	IP3: December 12, 2015	NL-07-039 NL-08-127	A.3.2.1.4 4.2.5

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
33	At least 2 years prior to entering the period of extended operation, for the locations identified in LRA Table 4.3-13 (IP2) and LRA Table 4.3-14 (IP3), under the Fatigue Monitoring Program, IP2 and IP3 will implement one or more of the following: (1) Consistent with the Fatigue Monitoring Program, Detection of Aging Effects, update the fatigue usage calculations using refined fatigue analyses to determine valid CUFs less than 1.0 when accounting for the effects of reactor water environment. This includes applying the appropriate Fen factors to valid CUFs determined in accordance with one of the following: 1. For locations in LRA Table 4.3-13 (IP2) and LRA Table 4.3-14 (IP3), with existing fatigue analysis valid for the period of extended operation, use the existing CUF. 2. Additional plant-specific locations with a valid CUF may be evaluated. In particular, the pressurizer lower shell will be reviewed to ensure the surge nozzle remains the limiting component. 3. Representative CUF values from other plants, adjusted to or enveloping the IPEC plant specific external loads may be used if demonstrated applicable to IPEC. 4. An analysis using an NRC-approved version of the ASME code or NRC-approved alternative (e.g., NRC-approved code case) may be performed to determine a valid CUF. (2) Consistent with the Fatigue Monitoring Program, Corrective Actions, repair or replace the affected locations before exceeding a CUF of 1.0.	IP2: Complete IP3: Complete	NL-07-039 NL-13-122 NL-07-153 NL-08-021 NL-10-082	A.2.2.2.3 A.3.2.2.3 4.3.3 Audit item 146
34	IP2 SBO / Appendix R diesel generator will be installed and operational by April 30, 2008. This committed change to the facility meets the requirements of 10 CFR 50.59(c)(1) and, therefore, a license amendment pursuant to 10 CFR 50.90 is not required.	Complete	NL-13-122 NL-07-078 NL-08-074 NL-11-101	2.1.1.3.5

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
35	Perform a one-time inspection of representative sample area of IP2 containment liner affected by the 1973 event behind the insulation, prior to entering the period of extended operation, to assure liner degradation is not occurring in this area. Perform a one-time inspection of representative sample area of the IP3 containment steel liner at the juncture with the concrete floor slab, prior to entering the period of extended operation, to assure liner degradation is not occurring in this area. Any degradation will be evaluated for updating of the containment liner analyses as needed.	IP2: Complete IP3: December 12, 2015	NL-08-127 NL-13-122 NL-11-101 NL-09-018	Audit Item 27
36	Perform a one-time inspection and evaluation of a sample of potentially affected IP2 refueling cavity concrete prior to the period of extended operation. The sample will be obtained by core boring the refueling cavity wall in an area that is susceptible to exposure to borated water leakage. The inspection will include an assessment of embedded reinforcing steel. Additional core bore samples will be taken, if the leakage is not stopped, prior to the end of the first ten years of the period of extended operation. A sample of leakage fluid will be analyzed to determine the composition of the fluid. If additional core samples are taken prior to the end of the first ten years of the period of extended operation, a sample of leakage fluid will be analyzed.	IP2: Complete	NL-08-127 NL-11-101 NL-13-122 NL-09-056 NL-09-079	Audit Item 359
37	Enhance the Containment Inservice Inspection (CII-IWL) Program to include inspections of the containment using enhanced characterization of degradation (i.e., quantifying the dimensions of noted indications through the use of optical aids) during the period of extended operation. The enhancement includes obtaining critical dimensional data of degradation where possible through direct measurement or the use of scaling technologies for photographs, and the use of consistent vantage points for visual inspections.	IP2: Complete IP3: Complete	NL-08-127 NL-13-122	Audit Item 361

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
38	For Reactor Vessel Fluence, should future core loading patterns invalidate the basis for the projected values of RTpts or C_VUSE, updated calculations will be provided to the NRC.	IP2: Complete IP3: December 12, 2015	NL-08-143 NL-13-122	4.2.1
39	Deleted		NL-09-079	
40	Evaluate plant specific and appropriate industry operating experience and incorporate lessons learned in establishing appropriate monitoring and inspection frequencies to assess aging effects for the new aging management programs. Documentation of the operating experience evaluated for each new program will be available on site for NRC review prior to the period of extended operation.	IP2: Complete IP3: December 12, 2015	NL-09-106 NL-13-122	B.1.6 B.1.22 B.1.23 B.1.24 B.1.25 B.1.27 B.1.28 B.1.33 B.1.37 B.1.38
41	IPEC will inspect steam generators for both units to assess the condition of the divider plate assembly. The examination technique used will be capable of detecting PWSCC in the steam generator divider plate assembly. The IP2 steam generator divider plate inspections will be completed within the first ten years of the period of extended operation (PEO). The IP3 steam generator divider plate inspections will be completed within the first refueling outage following the beginning of the PEO.	IP2: After the beginning of the PEO and prior to September 28, 2023 IP3: Prior to the end of the first refueling outage following the beginning of the PEO.	NL-11-032 NL-11-074 NL-11-090 NL-11-101	N/A

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
42	IPEC will develop a plan for each unit to address the potential for cracking of the primary to secondary pressure boundary due to PWSCC of tube-to-tubesheet welds using one of the following two options. Option 1 (Analysis) IPEC will perform an analytical evaluation of the steam generator tube-to-tubesheet welds in order to establish a technical basis for either determining that the tubesheet cladding and welds are not susceptible to PWSCC, or redefining the pressure boundary in which the tube-to-tubesheet weld is no longer included and, therefore, is not required for reactor coolant pressure boundary function. The redefinition of the reactor coolant pressure boundary must be approved by the NRC as a license amendment request. Option 2 (Inspection) IPEC will perform a one-time inspection of a representative number of tube-to-tubesheet welds in each steam generator to determine if PWSCC cracking is present. If weld cracking is identified: a. The condition will be resolved through repair or engineering evaluation to justify continued service, as appropriate, and b. An ongoing monitoring program will be established to perform routine tube-to-tubesheet weld inspections for the remaining life of the steam generators.	IP2: Prior to March 2024 IP3: Prior to the end of the first refueling outage following the beginning of the PEO. IP2: Between March 2020 and March 2024 IP3: Prior to the end of the first refueling outage following the beginning of the PEO.	NL-11-032 NL-11-074 NL-11-090 NL-11-096	N/A
43	IPEC will review design basis ASME Code Class 1 fatigue evaluations to determine whether the NUREG/CR-6260 locations that have been evaluated for the effects of the reactor coolant environment on fatigue usage are the limiting locations for the IP2 and IP3 configurations. If more limiting locations are identified, the most limiting location will be evaluated for the effects of the reactor coolant environment on fatigue usage. IPEC will use the NUREG/CR-6909 methodology in the evaluation of the limiting locations consisting of nickel alloy, if any.	IP2: Complete IP3: Prior to December 12, 2015	NL-11-032 NL-13-122 NL-11-101	4.3.3

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
44	IPEC will include written explanation and justification of any user intervention in future evaluations using the WESTEMS "Design CUF" module.	IP2: Complete IP3: Prior to December 12, 2015	NL-11-032 NL-11-101 NL-13-122	N/A
45	IPEC will not use the NB-3600 option of the WESTEMS program in future design calculations until the issues identified during the NRC review of the program have been resolved.	IP2: Complete IP3: Prior to December 12, 2015	NL-11-032 NL-11-101 NL-13-122	N/A
46	Include in the IP2 ISI Program that IPEC will perform twenty-five volumetric weld metal inspections of socket welds during each 10-year ISI interval scheduled as specified by IWB-2412 of the ASME Section XI Code during the period of extended operation. In lieu of volumetric examinations, destructive examinations may be performed, where one destructive examination may be substituted for two volumetric examinations.	IP2: Complete	NL-11-032 NL-11-074 NL-13-122	N/A
47	~~IPEC will perform and submit analyses that demonstrate that the lower support column bodies will maintain their functionality during the period of extended operation considering the possible loss of fracture toughness due to thermal and irradiation embrittlement. The analyses will be consistent with the IP2/IP3 licensing basis.~~ Deleted.	~~IP2: Prior to August 15, 2014~~ ~~IP3: Prior to December 12, 2015~~	~~NL-12-089~~ ~~NL-13-052~~ ~~NL-13-122~~ ~~NL-14-067~~ NL-14-093	N/A

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
48	Entergy will visually inspect IPEC underground piping within the scope of license renewal and subject to aging management review prior to the period of extended operation and then on a frequency of at least once every two years during the period of extended operation. This inspection frequency will be maintained unless the piping is subsequently coated in accordance with the preventive actions specified in NUREG-1801 Section XI.M41 as modified by LR-ISG-2011-03. Visual inspections will be supplemented with surface or volumetric non-destructive testing if indications of significant loss of material are observed. Consistent with revised NUREG-1801 Section XI.M41, such adverse indications will be entered into the plant corrective action program for evaluation of extent of condition and for determination of appropriate corrective actions (e.g., increased inspection frequency, repair, replacement).	IP2: Complete IP3: Prior to December 12, 2015	NL-12-174 NL-13-122	N/A
49	Recalculate each of the limiting CUFs provided in section 4.3 of the LRA for the reactor vessel internals to include the reactor coolant environment effects (F_{en}) as provided in the IPEC Fatigue Monitoring Program using NUREG/CR-5704 or NUREG/CR-6909. In accordance with the corrective actions specified in the Fatigue Monitoring Program, corrective actions include further CUF re-analysis, and/or repair or replacement of the affected components prior to the CUF_{en} reaching 1.0.	IP2: Complete IP3: Prior to December 12, 2015	NL-13-052 NL-13-122	A.2.2.2 A.3.2.2
50	Replace the IP2 split pins during the 2016 refueling outage (2R22).	IP2: Prior to completion of 2R22 IP3: N/A	NL-13-122 NL-14-067	A.2.1.41 B.1.42